Pasture Condition Assessment:

Using the USDA-NRCS Pasture Condition Score Sheet

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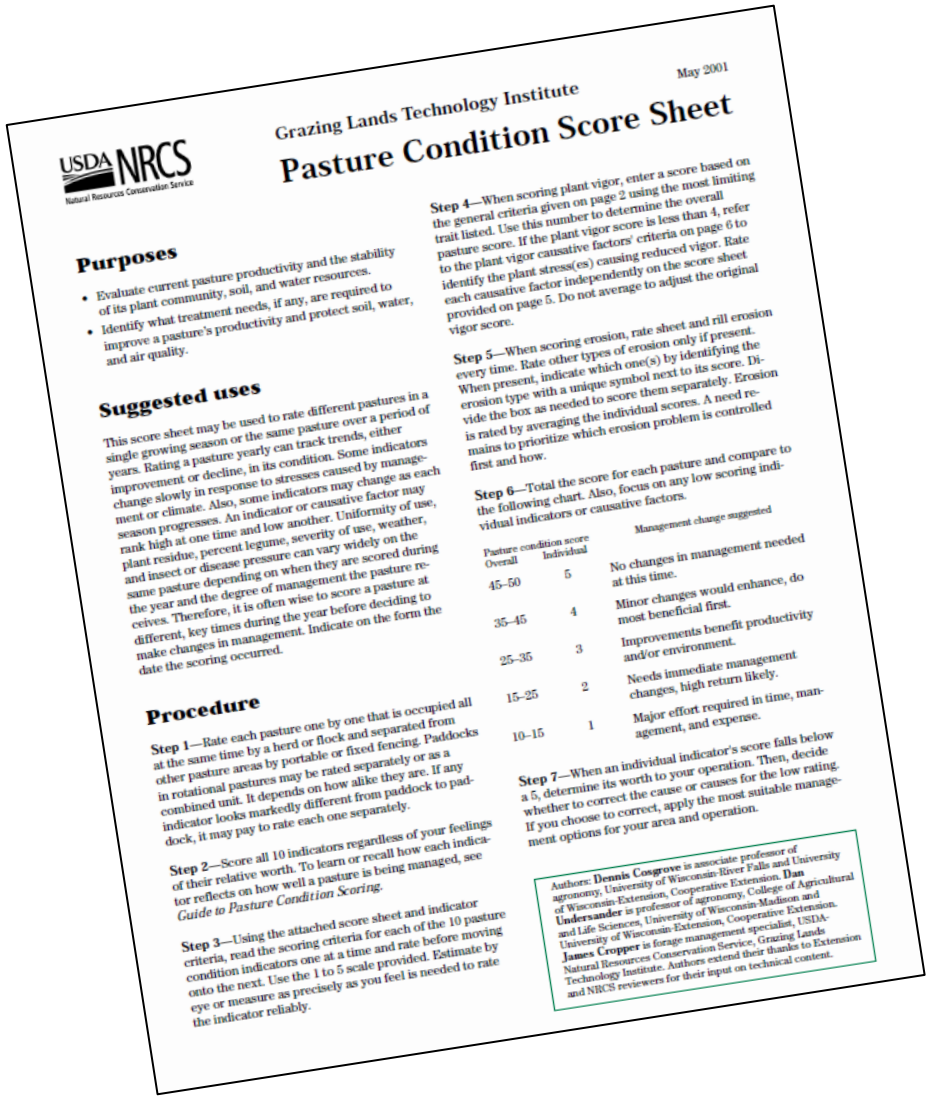
Pasture Condition Score (PCS)

- Purpose:
  - A systematic, repeatable approach to evaluate pasture productivity and the stability of its plant community, soil and water resources
  - Use this detailed assessment tool to determine causative factors and lead to specific management recommendations for improved pasture condition and productivity of the system

PCS Suggested Uses

- Assess and rate different pastures in a single growing season or rate the same pasture or paddock over several years
- Rating pastures annually can track trends in pasture condition
- Pasture indicators or causative factors may rank very low initially but improve as management changes over time

Assessment Documents



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Pasture Condition Score Sheet

Purposes

- Evaluate current pasture productivity and the stability of its plant community, soil, and water resources.
- Identify what treatment needs, if any, are required to improve a pasture's productivity and protect soil, water, and air quality.

Suggested uses

This score sheet may be used to rate different pastures in a single growing season or the same pasture over a period of years. Rating a pasture yearly can track trends, either improvement or decline, in its condition. Some indicators change slowly in response to stresses caused by management or climate. Also, some indicators may change as each season progresses. An indicator or causative factor may rank high at one time and low another. Uniformity of use, plant residue, percent legume, severity of use, weather, and insect or disease pressure can vary widely on the same pasture depending on when they are scored during the year and the degree of management the pasture receives. Therefore, it is often wise to score a pasture at different, key times during the year before deciding to make changes in management. Indicate on the form the date the scoring occurred.

Procedure

Step 1—Rate each pasture one by one that is occupied all at the same time by a herd or flock and separated from other pasture areas by portable or fixed fencing. Paddocks in rotational pastures may be rated separately or as a combined unit. It depends on how alike they are. If any indicator looks markedly different from paddock to paddock, it may pay to rate each one separately.

Step 2—Score all 10 indicators regardless of your feelings of their relative worth. To learn or recall how each indicator reflects on how well a pasture is being managed, see *Guide to Pasture Condition Scoring*.

Step 3—Using the attached score sheet and indicator criteria, read the scoring criteria for each of the 10 pasture condition indicators one at a time and rate before moving onto the next. Use the 1 to 5 scale provided. Estimate by eye or measure as precisely as you feel is needed to rate the indicator reliably.

Step 4—When scoring plant vigor, enter a score based on the general criteria given on page 2 using the most limiting trait listed. Use this number to determine the overall pasture score. If the plant vigor score is less than 4, refer to the plant vigor causative factors' criteria on page 6 to identify the plant stress(es) causing reduced vigor. Rate each causative factor independently on the score sheet provided on page 5. Do not average to adjust the original vigor score.

Step 5—When scoring erosion, rate sheet and rill erosion every time. Rate other types of erosion only if present. When present, indicate which one(s) by identifying the erosion type with a unique symbol next to its score. Divide the box as needed to score them separately. Erosion is rated by averaging the individual scores. A need remains to prioritize which erosion problem is controlled first and how.

Step 6—Total the score for each pasture and compare to the following chart. Also, focus on any low scoring individual indicators or causative factors.

Pasture condition score Overall	Individual	Management change suggested
45–50	5	No changes in management needed at this time.
35–45	4	Minor changes would enhance, do most beneficial first.
25–35	3	Improvements benefit productivity and/or environment.
15–25	2	Needs immediate management changes, high return likely.
10–15	1	Major effort required in time, management, and expense.

Step 7—When an individual indicator's score falls below a 5, determine its worth to your operation. Then, decide whether to correct the cause or causes for the low rating. If you choose to correct, apply the most suitable management options for your area and operation.

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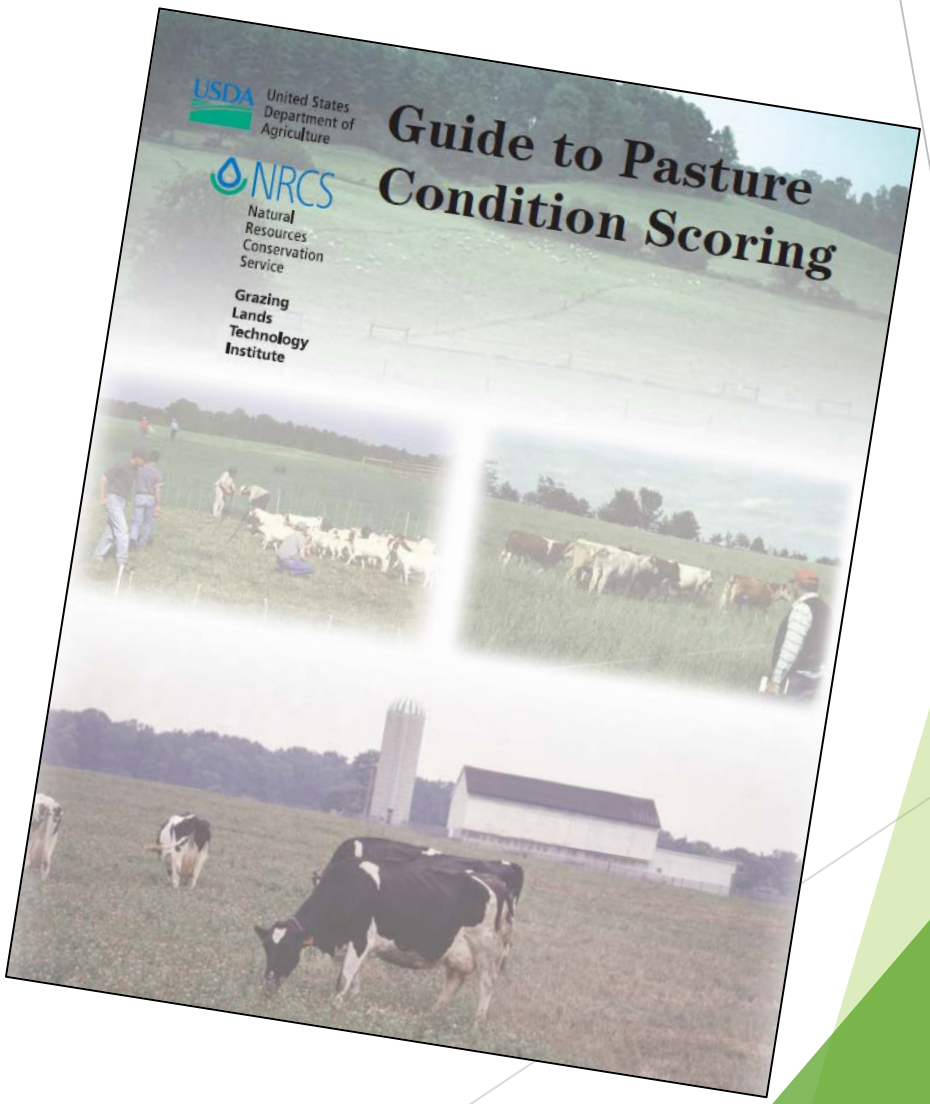

Pasture Indicators

The 10 indicators below are rated (1 – 5) based on visual assessment the day of evaluation.

- Percent Desirable Plants
- Plant Cover
- Plant Diversity
- Plant Residue
- Plant Vigor
- Percent Legume
- Uniformity of Use
- Livestock Concentration Areas
- Soil Compaction
- Erosion

Rating Plant Condition Indicators

- Detailed descriptions are provided for consistent rating of each indicator

Pasture Condition Score Sheet

Indicator	Score 1	2	3	4	5
Plant vigor *If plant vigor rating is less than 4, determine cause by rating 6 possible causes listed on page 5.*	No recovery after grazing or pale yellow or brown, or permanent wilting, or plant loss due to insects or disease, exercise lot only. Or, lodged, dark green overly lush forage. Often avoided by grazers.	Recovery after grazing takes 2 or more weeks longer than normal, or yellowish green leaves, or major insect or disease yield loss, or plants wilted most of day. Productivity very low.	Recovery after grazing takes 1 week longer than normal, or urine/dung patches dark green in contrast to rest of plants, or minor insect or disease loss or mid-day plant wilting. Yields regularly below site potential.	Recovery after grazing takes 1 to 2 days longer than normal, or light green plants among greener urine and dung patches, or minor insect or disease damage. No plant wilting. Yields near site potential.	Rapid recovery after grazing. Healthy green color. No signs of insect or disease damage. No leaf wilting. Yields at site potential for the species adapted to the site's soil and climate.

Percent Desirable Plants

- We typically look for a high percentage of desirable forage species (>60%) that will be productive through a majority of the growing season.
- Desirable species are those that are readily grazed by the livestock in the system, adapted to be persistent and providing high quality and tonnage over the growing season.
- Intermediate species are readily eaten but have a short grazing season or drop in quality fast and have low productivity.
- Undesirables are typically rejected by the livestock, have low quality or cause negative side effects when eaten and crowd out more desirable species.

This photo of palatable and nutritious grasses and legumes is an example of a very desirable forage mix.

Desirability Depends on Livestock Goals

Prime goat pasture is very undesirable cattle pasture

Priority #1 Wildlife Habitat

Priority #2: Supplemental Grazing

Percent Desirable Plants

Sometimes it is purely undesirable

Plant Cover

Living plant cover of desirable and intermediate plant species.

- The percentage of soil surface covered by live plants plays an important role of pasture production and soil and water protection.
- A dense stand, when properly grazed, results in high animal intake and high sunlight interception for 90+% plant cover, normally yields many benefits to the system
- The score is based on either green leaf canopy or live vegetative basal area cover percentage.
- Score prior to grazing in a rotational system

Plant Cover

Low plant cover causes problems

- Bare and open spots allow for
  - Weed encroachment
  - Increased rainfall runoff
  - Soil erosion

- This can occur because of
  - Severity of use due to uncontrolled grazing
  - Low pH and soil fertility
  - Poor adaptation of species
  - Short term climate stress
  - Insect or disease pressure

Plant Diversity

Number of different forage species well represented (>20%) in a pasture.

- Low species diversity often results in pastures to be less reliable suppliers of forage throughout the grazing season
- High pasture diversity tends to compensate and perform more consistently through seasonal climate stress
- Good representation of different functional plant groups is a sign of good plant diversity
- The 4 basic functional groups include
  - Warm Season
  - Cool Season
  - Legumes
  - Other Forbs

Plant Residue

Ground cover residue is the dead leaves and/or stems on the ground between the plant bases.

Plant residue, in various states of decay, provides additional surface cover and organic matter to the soil.

Plant Residue

Too much dead residue can create a thick thatch, inhibiting new plant shoot growth and seedling emergence.

- Buildup of thatch is an indicator of retarded residue decay
- Thatch sometimes promotes fungal diseases
- Heavy thatch results in forage stand decline over time

Plant Vigor

Look at the color and size of plants, rate of regrowth after harvest and overall productivity.

The vigorous growth of the pasture below exhibits a healthy green plant color, free of disease and growing rapidly after grazing stops. This is a result of good soil fertility, adapted forage species, grazing management and good growing conditions.

Plant Vigor

- A plant vigor score of less than 4 typically shows signs of
  - Dark green contrast around manure piles and urine patches compared to the rest of the light green to yellowish plants in the field
  - Slower recovery after grazing
  - Yields below site potential
- It is very important to determine the causative factor contributing to low vigor

Percent Legume

Legumes improve the forage quality of a pasture mix and serve as important sources of nitrogen when they comprise over 20% of total air dry weight of the stand.

- Visually estimate the percent of legume present in total forage mass
- 30 – 40% legume is very good
- Excessive amounts of bloating legumes are not desirable
- Well adapted and improved legume types are most desirable because they are most productive
- Sufficient legume content produces more milk and yields more lbs. on calves

Percent Legume Estimation

Visually it appears to be more clover than what is really present.

31% legume 69% grass dry wt.

Uniformity of Use

Uniformity of use is a measure of how evenly a pasture is grazed, versus how much of the pasture is avoided or not grazed.

Even grazing of palatable forage species with managed grazing.

Spotty, uneven grazing, avoiding fescue and actively grazing crabgrass.

Livestock Concentration Areas

These can be heavy use trailing areas, loafing areas or feed areas. This indicator also accounts for the size and proximity to water sources.

More Concentration Areas

Loafing in the shade by the creek and also loafing in the shade by the fence line.

Soil Compaction

Soil compaction directly impacts water infiltration, runoff and soil water availability.

- Soil compaction can often be detected in the field using a soil probe or wire flag pin.
- Compare in field resistance to penetration to resistance found at a fence line or under brush where livestock cannot stand or walk on the soil surface.
- Further investigation with a shovel can reveal massive or platy soil structure in severely compacted areas.

Soil Compaction in Pastures

High stocking rates and overgrazing typically results in more soil compaction. This is somewhat invisible to many people but the symptoms are there if you look.

This overgrazed horse pasture has resulted in low canopy cover, minimal surface residue and severely compacted soil. This poses a triple threat to soil erosion.

Sheet and Rill Erosion

Sheet and rill erosion are caused by direct raindrop impact and drip splash onto bare soil and a thin sheet of runoff water flowing over the soil surface. It is considered invisible but signs of soil loss are evident after the rain event has passed.

Close grazed sloping pastures, exposing more bare ground, are most susceptible. A close look at the ground surface shows debris dams above plant bases and exposed fine roots on bare soil between plants.

Streambank and Shoreline Erosion

Streambank and shoreline erosion is almost always present where livestock are pastured with continuous grazing and unlimited access to natural surface water bodies. This can be greatly improved with limited access to surface water combined with controlled grazing management.

Gully Erosion and Wind Erosion

- Gully erosion typically starts small but can have major negative impacts if not addressed early.
- It is important to walk the entire pasture to identify all areas of erosion needing repair.
- Wind erosion is very rare on pasture land but is possible with certain soil types and topography.

Causative Factors Affecting Pasture Condition

- If individual or cumulative indicator scores are low and pasture condition is compromised then the underlying causative factors need to be identified.
- Linking specific causative factors to low pasture indicator scores is critical for recommending the right management changes for improved pasture productivity
- The causative factors shown on the right that may affect plant vigor are applicable to and often interrelated with low scores of the other plant condition indicators as well.

Causative Factors Affecting Plant Vigor
Soil fertility (P & K status)*   Phosphorus and potassium status of the soil are: 1 2 3 4 5   (Read criteria and select appropriate number)
Soil fertility (N status)*   Nitrogen status of the grasses is: 1 3 5   (Read criteria and select appropriate number)
Soil pH*   pH status of the soil for the upper 4-inch root zone best fits: 1: ≤ 4.5, or > 9.0   2: 4.5-5.0, or 8.5-9.0   3: 5.1-5.5, or 7.9-8.4   4: 5.6-6.0, or 7.4-7.8   5: 6.0-7.3
Severity of use   Degree of forage removal is: 1 2 3 4 5   (Read criteria and select appropriate number)
Site adaptation of desired species   Presence of planted or desired forage species is: 1 2 3 4 5   (Read criteria and select appropriate number)
Climatic stresses   Degree of plant stress due to recent weather events is: 1 2 3 4 5   (Read criteria and select appropriate number)
Insects and disease pressure   Degree of plant stress due to insect or disease pressure is: 1 2 3 4 5   (Read criteria and select appropriate number)

Indicator Scores

- Low individual indicator scores should be reviewed to consider how management changes would benefit to the goals of the operation.
- Depending on the total scores for each pasture or paddock, significant management changes may be needed

Pasture condition score		Management change suggested
Overall	Individual	
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Using the PCS Assessment and Summary

- The pasture condition assessment should be conducted at least annually to track changes in pasture condition.
- A review of the score summaries and specific causative factors should be reviewed with the landowner in the field.
- Specific management recommendations can be added to the grazing plan as an addendum, to address specific management practices needed to achieve pasture productivity and grazing system goals.

Acknowledgements

- Most of the photos were taken on actual farms during the conservation planning process.
- Much of the text in this presentation was taken directly from the Pasture Condition Score Sheet May 2001 and the Guide to Pasture Condition Scoring May 2001.
- These publications were adapted from A3667, Determining Pasture Condition, by Dennis Cosgrove, Dan Undersander, and Maurice Davis, copyright 1996 as a Division of Cooperative Extension of the University of Wisconsin-Extension.

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